



Data & Information

for global change studies

The DAAC Alliance
and Cooperating Data Centers

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Overview

The Earth Observing System (EOS) is an integral part of the National Aeronautics and Space Administration's (NASA's) Earth Science Enterprise (ESE). ESE is a long-term global change research program designed to improve the understanding of Earth's interrelated processes involving the atmosphere, oceans, land surfaces, and polar regions. Data from EOS instruments and other Earth science measurement systems are useful in understanding the causes and processes of global climate change and the consequences of human activities.

The EOS Data and Information System (EOSDIS) provides data management and user services for products from EOS instruments and other Earth science measurement systems. Within EOSDIS, Distributed Active Archive Centers (DAACs) process, archive, and distribute EOS and related data products. The data centers of the DAAC Alliance, each specializing in one or more of the Earth sciences disciplines, coordinate efforts and resources to offer a full range of data and information services to support the global change research community. The DAAC Alliance centers and their science disciplines are listed on page 3.

The DAAC Alliance holds an enormous amount of data from EOS and other missions. Terra, the EOS flagship launched in December 1999, carries a set of complementary instruments able to acquire coincident data at multiple resolutions and viewing angles. Landsat 7 flies in formation with Terra allowing synchronized data. The Tropical Rainfall Measuring Mission (TRMM), TOPEX/POSEIDON, QuikSCAT, RADARSAT-1, and many other missions add to the data richness. The different capabilities of the instruments allow new research into how Earth's processes function together as a total environmental system. The data products are available from the DAACs and can be ordered through the EOS Data Gateway (EDG) and data center-specific online ordering systems.

EOS Data Gateway

Historically, scientists have had difficulty conducting interdisciplinary research. Locating useful data required contacting many different data centers for data holdings and availability. The EDG is designed to overcome that difficulty by allowing a user to search for and order data from one data center or a combination of data centers in a single online session. Based on client/server computing technology, the EDG accomplishes one of the goals of EOSDIS: to make global change research data more visible and accessible for interdisciplinary research.

For a detailed description of the EDG, its purpose, search-and-order capabilities, and accessibility, refer to the EOS Data Gateway section on page 4.

DAAC Alliance

The DAAC Alliance is responsible for data archival, product development and distribution, and user support. Member data centers are distinguished from one another by their different Earth science disciplines. Linked by the EDG, the data centers appear to users as a single system. Users can search and order data from one or more data centers through the EDG, or they can contact the User Services staff at any data center to receive assistance in using this system or obtain information about a particular data product.

Data products available from the DAAC Alliance are data sets, or groups of data sets, derived from EOS instruments and related Earth science measurement systems. EOS standard data products contain a wide range of physical, geophysical, biochemical, and other parameters and are available in a number of processed levels. As a service for users, the data centers package groups of some of their most popular data sets and make them available on CD-ROM.

In addition to the search-and-order capabilities provided by the EDG, the data centers have individual online systems that allow them to provide unique services for users of their specialized data. The center-specific systems look and function much like the EDG, but they emphasize products or services specific to the particular data center.

This booklet contains a section for each data center of the DAAC Alliance. The sections, presented alphabetically, provide information about the data center, its data holdings, data availability, and data access through the EDG and/or data center-specific online system. Contact information is provided in each section and is also summarized on the back of the cover.

Cooperating Data Centers

Other data centers cooperate with EOS by providing additional data and services. These centers include the National Oceanic and Atmospheric Administration (NOAA) data centers (see page 24). In addition, several international data centers participate in interoperability programs through the Committee on Earth Observing Satellites (CEOS). Data from these international centers and several other data centers are also visible through the EDG.

Data Centers and Their Scientific Disciplines

The following table lists the data centers and their areas of expertise. For information about any of the data centers, contact the center's User Services Office. Refer to the data center's section in this booklet for complete contact information.

Data Centers and Earth Science Specialities

Data Center	Scientific Discipline
<i>DAAC Alliance</i>	
ASF DAAC Alaska SAR Facility	Synthetic Aperture Radar (SAR) Products and Polar Regions
EDC DAAC EROS Data Center	Land Processes
GHRC Global Hydrology Resource Center	Global Hydrology
GSFC DAAC NASA Goddard Space Flight Center	Upper Atmosphere Atmospheric Dynamics Global Precipitation Global Biosphere Ocean Color
JPL DAAC NASA Jet Propulsion Laboratory	Physical Oceanography
LaRC DAAC NASA Langley Research Center	Radiation Budget Clouds Aerosols Tropospheric Chemistry
NSIDC DAAC National Snow and Ice Data Center	Snow and Ice Cryosphere and Climate
ORNL DAAC Oak Ridge National Laboratory	Biogeochemical Dynamics Terrestrial Ecology
SEDAC Socioeconomic Data and Applications Center	Human Interactions in the Environment
<i>Cooperating Data Centers</i>	
NOAA Data Centers National Oceanic and Atmospheric Administration	Environmental Data

EOS Data Gateway

The purpose of the EOS Data Gateway (EDG) is to facilitate Earth science research through improved access to existing data and provide the search-and-order service for the EOSDIS Core System (ECS). The ECS was developed to accommodate the archival and distribution of the tremendous amount of data being received from a new series of EOS instruments, the first of which were launched on the Terra satellite in December 1999.

The EDG provides a consistent view of more than 1,300 data products held at several EOSDIS and international data centers. The system allows users, including those without specific knowledge of the data, to search science data holdings, retrieve high-level descriptions of data sets and detailed descriptions of the data inventory, view browse images, and place orders for data products. This service is accessible over the Internet via the World Wide Web.

EDG Functionality

Search Types

A search is done by specifying geographic areas of interest along with either geophysical parameter, data set name, or sensor name. Several other criteria such as source name, campaign, extended attribute, and time range may optionally be used. EDG searches on data sets and documents. Search options include a primary data search, quick data set lookup, data granule ID search, local granule ID search, and two document search methods.

The *Primary Data* search provides descriptions of specific observations or collections of observations of data (granules) that are available for request from a data center.

The *Data Set Lookup* feature lets a user type in a simple text string or common term to quickly obtain a list of data sets. This feature serves as a first step in the data search-and-order process.

The *Data Granule ID* search uses a set of characters that uniquely identifies each granule of a data set in the system. Data granule IDs are created at the DAAC where the data granule (and parent data set) originates. The *Local Granule ID* search is performed only on data obtained from EOS platforms. This search uses a set of characters that provides the EOS scientist with important information about the granule. Both of these granule ID search options are designed for advanced and knowledgeable users.

The *Summary Document* search provides summary information about EOSDIS data sets to help the user determine which data products are appropriate. Information is derived from the Global Change Master Directory (GCMD), which is a comprehensive directory of Earth science

and global change data. (The GCMD can be accessed directly at <http://gcmd.nasa.gov>.)

The *Detailed Document* search provides detailed descriptions for one or more data sets and related entities. The information, which is helpful for determining the location and content of each data set and its potential usefulness for a specific application, consists of data sources, instruments, projects, and data centers that archive and distribute the data.

Additional Functions

The *order* function allows the user to select the desired data processing options and media. This function also allows the user to specify contact, billing, and shipping addresses.

The *coverage* map is a graphical representation of the geographic coverage of selected data observations (data granules).

The *browse* function allows the user to view data (possibly reduced in resolution) as an aid to selection for many of the products available from the data centers. Such data may be viewed in the EDG interface or retrieved via File Transfer Protocol (FTP).

Accessing the EDG

The EDG uses a Web interface to provide access via the Internet to Earth science data and information from U.S. and international data centers. This interface is suitable for a wide range of Earth science data users—from users with limited computer resources interested in performing occasional, simple searches for data, to the professional Earth science researcher in need of executing complex data queries on a regular basis. The Web interface is available at

<http://eos.nasa.gov/imswelcome>

Simple instructions appear on the screen when a connection is made. No password or special account is necessary. The welcome screen contains an option to compose a search. Search criteria are specified by entering search keywords with optional spatial and temporal ranges as well as other search attributes, including geophysical parameters, data sources, and processing levels. Any number of search attributes may be selected.

When the search results are returned, summary and detailed descriptions are provided. Sample browse images are also provided for many of the data sets. A variety of media and formatting options are available depending on the data set.

For assistance or more information on using the EDG to search for and order data, contact the EDG Science Support Team by E-mail at edg@killians.gsfc.nasa.gov, or contact any of the DAAC Alliance User Services Offices.

Alaska SAR Facility

The ASF DAAC is located in the Geophysical Institute at the University of Alaska, Fairbanks. It is supported by NASA to acquire, process, archive, and distribute synthetic aperture radar (SAR) data from polar-orbiting satellites to advance polar research and Earth science.

Available Data

ASF provides users with several types of data, including SAR data acquired from non-U.S. sources and higher level derived products.

SAR Image Data Sets

European Remote-Sensing Satellites (ERS-1 and ERS-2) C-Band SAR Systems—ERS-1 data are available for August 1991 through June 1996. ERS-2 data are available for August 1996 through the present (active mission). The side-looking radar has an incidence angle of 23 degrees and a 100-km-swath width. Primary ground coverage exists within a circle of 3,000-km radius about two receiving ground stations: ASF (Fairbanks, Alaska) and McMurdo Station (McMurdo, Antarctica). The data can be processed to resolutions ranging from 30 to 240 meters.

ASF has produced a sampler CD-ROM that provides examples of SAR data and derived products, along with descriptive text. The 79-image CD includes viewing software for PC DOS, Macintosh, and UNIX platforms, and is available without restriction. All images on the CD are also available through the ASF home page.

Japanese Earth Remote-Sensing Satellite (JERS-1) L-Band SAR System—Data are available for May 1992 through October 1998. The side-looking radar has an incidence angle of 35 degrees and a 75-km-swath width. Coverage exists within a circle of 2,600-km radius centered on Fairbanks, at resolutions ranging from 10 to 240 meters. Limited coverage outside this mask, including extensive Amazon and Boreal forest data, is also available.

RADARSAT-1 C-Band SAR System—Data are available for February 1996 through the present (active mission). The side-looking radar has a range of incidence angles from approximately 20 to 60 degrees. Primary ground coverage exists within a circle of 3,000-km radius about two receiving ground stations: ASF (Fairbanks, Alaska) and McMurdo Station (McMurdo, Antarctica). The data can be processed to resolutions ranging from 30 to 600 meters. Significant coverage outside these station masks is also available.

RADARSAT-1 SAR Mosaic of Antarctica—This first, complete, high-resolution SAR map of Antarctica is a remarkable snapshot of the continent as it appeared during the fall of 1997. The RADARSAT-1 SAR Mosaic of Antarctica was produced by NASA's Pathfinder Project RADARSAT-1 Antarctic Mapping Program (RAMP). Canadian partners included the Canadian Space Agency (CSA), Canadian Centre for Remote Sensing (CCRS), and RADARSAT International (RSI). U.S. partners included Ohio State University, NASA's ASF, NASA's Jet Propulsion Laboratory (JPL), and the Vexcel Corporation. Additional support was provided by NASA's Goddard Space Flight Center (GSFC), the Environmental Research Institute of Michigan (ERIM), and the National Imagery and Mapping Agency (NIMA). This mosaic is available in 250-m resolution on CD-ROM and 125-m resolution via FTP.

RADARSAT Geophysical Processor System (RGPS)—This novel and sophisticated analysis tool uses RADARSAT ScanSAR B data to generate Arctic-wide sea ice information products every 6 days. This RADARSAT acquisition plan, called the Arctic Snapshot, serves the requirements of the National Ice Center and the RGPS. The tool was developed by JPL of the California Institute of Technology and is being monitored there.

A series of higher level products derived from SAR data is also available for distribution. Sea ice motion, ice type and concentration, and ocean wave products are produced from ERS-1 SAR data and are archived at ASF.

SAR Data Distribution Policy

ASF distributes SAR data to NASA-approved researchers. Information on becoming an approved researcher is available on ASF's Web site.

Data Access

Online access over the Internet is available through the EDG (see page 4).

For assistance or more information, contact

**ASF DAAC User Services
University of Alaska Fairbanks
P.O. Box 757320
Fairbanks, Alaska 99775-7320 U.S.A.**

Phone: +1 907-474-6166; Fax: +1 907-474-2665

E-mail: asf@eos.nasa.gov

Web: <http://www.asf.alaska.edu>

Earth Resources Observation Systems (EROS) Data Center

The EDC DAAC promotes interdisciplinary study and understanding of the integrated Earth system by providing data for the investigation, characterization, and monitoring of biologic, geologic, hydrologic, ecologic, and related conditions and processes. In addition to current data sets, the EDC DAAC ingests, processes, distributes, and archives data for land-related EOS sensors.

Available Data

Moderate Resolution Imaging Spectroradiometer (MODIS)—Land discipline products (from June 2000) provide global coverage at 250-m, 500-m, and 1-km resolutions. Data sets are Level 2 and higher. Products include surface reflectance, land surface temperature, vegetation indices, fire anomalies, leaf area index, bidirectional reflectance distribution function and albedo, land cover change, vegetation cover conversion, and net primary production.

Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER)—Of Terra's onboard instruments, ASTER offers the highest resolution image data in visible and near-infrared (VNIR) wavelengths (15 m), shortwave infrared (SWIR) wavelengths (30 m), and thermal infrared (TIR) wavelengths (90 m). Its purpose is to improve understanding of local and regional phenomena of Earth's surface and atmosphere. Products include Level 1A, Level 1B, and eight on-demand products: brightness temperature; surface emissivity; decorrelation stretch VNIR, SWIR, and TIR; surface reflectance VNIR and SWIR; surface kinetic temperature; surface radiance VNIR, SWIR, and TIR; and Digital Elevation Model.

MODIS/ASTER Airborne Simulator (MASTER)—This data set supports the MODIS and ASTER instrument teams in algorithm development, calibration, and validation from December 1998 to the present.

EarthSat Geocover Orthorectified Landsat (4 and 5) TM Scenes—The EDC DAAC archives and distributes a global collection of Landsat orthorectified scenes at 30-m resolution. Only images that most closely met a specific set of criteria including acquisition data, cloud percentage, data quality parameters, and best available phenology were considered for the collection.

Landsat 7 Enhanced Thematic Mapper Plus (ETM+)—Landsat 7 provides repetitive, synoptic coverage of continental surfaces; spectral bands in visible and near-infrared (30-m resolution), panchromatic (15 m), and thermal infrared (60 m) regions of the electromagnetic spectrum; and absolute radiometric calibration. Landsat 7 promotes interdisciplinary research via synergism with other EOS observations, especially those orbiting in tandem with the Terra satellite for near-coincident

observations. EDC archives and distributes Level 0R formatted, Level 1 Radiometric, and Level 1 Geometric (i.e., systematic) products.

Global 1-Kilometer Advanced Very High Resolution Radiometer (AVHRR)—Data set products include stitched orbital segments and 10-day composites over various parts of the Earth and are composed of 5-channel, 10-bit, raw AVHRR data at 1.1-km resolution using NOAA's polar-orbiting Television and Infrared Observation Satellite (TIROS).

Global 30-Arc-Second Elevation Data Set (GTOPO30)—This data set provides 30- by 30-arc-second digital elevation data from several raster and vector sources. Data are available via FTP or on CD-ROM or 8-mm tape.

Landsat Pathfinder—The data sets result from cooperative research projects between NASA and several universities. The projects incorporate either Landsat Multispectral Scanner System (MSS) or Thematic Mapper (TM) data. The data sets consist of North American Land Characterization (NALC) Triplicates, the Humid Tropical Forest (HTF), the NASA Landsat Data Collection (NLDC), and the Global Land Cover Test Sites (GLCTS).

Aircraft Scanners—Data are NASA digital imagery of selected U.S. areas, acquired by airborne platforms. Available data sets are from TM Simulator (TMS), Thermal Infrared Multispectral Scanner (TIMS), and NS-001 sensors.

Advanced Solid-state Array Spectrometer (ASAS)—Data were collected in 1998 and 1999 by the ASAS sensor flown aboard NASA aircraft.

Future Data Holdings

The EDC DAAC will archive and distribute orthorectified global imagery of the earth. Future datasets will consist of TM global mosaic and MSS scenes. Approximately 8,500 images are currently selected for insertion into the archive upon release.

The second MODIS instrument, Flight Model 1 (FM1), will be integrated on the Aqua (EOS PM-1) spacecraft. EDC will archive and distribute various data sets derived from MODIS.

Data Access

Data orders may be placed at the EDC DAAC through the EDG (see page 4). Before placing orders, users are encouraged to use the EDG tutorial located at <http://edcdaac.usgs.gov/tutorial/>. Data are available by FTP or on a variety of media, including 8-mm cassette and CD-ROM.

For assistance or more information, contact

**EDC DAAC User Services
EROS Data Center
47914 252nd Street
Sioux Falls, SD 57198-0001 U.S.A.**

Phone: +1 605-594-6116, +1 866-573-3222; Fax: +1 605-594-6963

E-mail: edc@eos.nasa.gov

Web: <http://edcdaac.usgs.gov>

Global Hydrology Resource Center

The Global Hydrology Resource Center (GHRC) is the data management and user services arm of the Global Hydrology and Climate Center (GHCC). Located in Huntsville, Alabama, the GHRC provides data ingest, archive, processing, distribution, and other data networking services for the GHCC, national and international colleagues, and the general science community.

The GHRC provides both historical and current Earth science data, information, and products from satellite, airborne, and surface-based instruments. The GHRC acquires basic data streams and produces derived products from many instruments spread across a variety of instrument platforms.

Space-based lightning observations are obtained from the Lightning Imaging Sensor (LIS), the Optical Transient Detector (OTD) (1995–2000), and surface validation networks in the continental United States and Brazil. Global hydrological parameters such as sea surface temperature, atmospheric water vapor, wind direction, and atmospheric temperature are derived from several passive microwave instruments aboard the Tropical Rainfall Measuring Mission (TRMM), NOAA-15, NOAA-16, and Special Sensor Microwave Imager (SSM/I) satellites.

The GHRC is the host of the Passive Microwave Earth Science Information Partner (PM-ESIP), providing measurement of maximum tropical cyclone wind speeds, global tropospheric and atmospheric temperatures, and observations of tropical rainfall, sea surface temperature, and wind speed.

The Convection and Moisture Experiment (CAMEX) archive provides data from the 1998 CAMEX-3 field experiment and is currently supporting the CAMEX-4 field experiment in Jacksonville, Florida (August–September, 2001). CAMEX experiments produce high-resolution spatial and temporal information of hurricane structure, dynamics, and motion.

Available Data

Lightning

LIS and *OTD*—The world's first space-based sensors are capable of detecting and locating lightning events during day and night conditions with high-detection efficiency. The sensors' purpose is to detect the full spectrum of lightning flashes, including cloud-to-ground, cloud-to-cloud, and intracloud lightning events.

Passive Microwave Products

Global Tropospheric and Stratospheric Deep Layer Temperatures—Data are derived from the Advanced Microwave Sounding Unit and the Microwave Sounding Unit.

TRMM Microwave Imager Products—Data include water vapor, cloud water, ocean wind speed, and sea surface temperatures.

SSM/I—Brightness temperatures, water vapor, wind speed, and ocean wind speed data are available (period of record is not complete for all parameters).

Field Experiment Data Sets

CAMEX-3—Holdings include hurricane research data sets observed during the 1998 Atlantic hurricane season. Data are derived from a variety of passive microwave, radar, infrared, visible, lidar, interferometer, electric field, and lightning instruments on board the NASA ER-2 and DC-8 aircraft, as well as surface station instruments on Andros Island, Bahamas.

Advanced Microwave Precipitation Radiometer (AMPR)—Airborne passive microwave instrument data sets at 85 GHz, 37 GHz, 19 GHz, and 10 GHz were acquired on board the NASA ER-2 during the CAMEX-1, CAMEX-2, Texas and Florida Underflights (TEFLUN), First International Satellite Cloud Climatology Project (ISCCP) Regional Experiment-Arctic Cloud Experiment (FIRE-ACE), and Convection and Precipitation Electrification Experiment (CaPE) field experiments.

Data Access

Most data are publicly available, although some restrictions apply for the distribution of commercially obtained data. Access to data, data search and order, and information about GHRC's data sets can be found at the Web site listed below. Online access over the Internet is also available through the EDG (see page 4).

For assistance or more information, contact

**GHRC User Services
Global Hydrology and Climate Center
320 Sparkman Drive
Huntsville, AL 35805 U.S.A.**

Phone: +1 256-961-7932; Fax: +1 256-961-7859

E-mail: ghrc@eos.nasa.gov

Web: <http://ghrc.msfc.nasa.gov/>

GSFC DAAC

Upper Atmosphere, Atmospheric Dynamics, Global Precipitation, Global Biosphere, Ocean Color

Goddard Space Flight Center

The GSFC DAAC supports data in the upper atmospheric, atmospheric dynamics, global precipitation, global biospheric, and ocean color disciplines.

Available Data

Total Ozone Mapping Spectrometer (TOMS)—Data contain global column ozone amounts and ultraviolet reflectivity at 1- x 1.25-degree resolution. Data are available from the Nimbus-7 and Meteor-3 satellites from November 1978 through December 1994, and from the Advanced Earth Observing System (ADEOS) and Earth Probe (EP) missions from July 1996 through the present.

Upper Atmosphere Research Satellite (UARS)—Data contain profiles of upper atmospheric chemical constituents, winds, solar irradiance, and energetic particle input. Products from nine of the spacecraft's instruments are available as time- and latitude-ordered data sets for the 10-year mission from September 1991 to September 2001.

Television and Infrared Observation Satellite (TIROS) Operational Vertical Sounder (TOVS)—Pathfinder data contain global profiles of temperature, moisture, precipitation, cloudiness, and outgoing long-wave radiation at 1-degree resolution produced using improved algorithms. Data are available for 1978 through 1994.

Sea-viewing Wide Field-of-view Sensor (SeaWiFS)—Data contain oceanic pigment and chlorophyll concentrations and raw and water-leaving radiances. Data now available provide local, regional, and global coverage.

Greenhouse Effect Detection Experiment (GEDEX)—Data collection contains more than 60 data sets with parameters relevant to greenhouse gas research (surface and upper air temperatures, solar irradiances, radiation budget, clouds, and greenhouse gases). Coverage may be global, regional, or local, depending on the data set. Many data sets are available for a 10-year period spanning the 1980s.

International Satellite Land Surface Climatology Project (ISLSCP) Initiative I: Global Data Sets for Land-Atmosphere Models—Data contain near-surface meteorology, vegetation, biophysics, hydrology, radiation, soils, snow, and ice parameters. Monthly, monthly-6-hourly, and 6-hourly data are available globally on a 1-degree grid for 1987 through 1988.

Nimbus-7 Coastal Zone Color Scanner (CZCS)—Data contain 1-km and 4-km resolution radiance measurements, and pigment and chlorophyll concentrations and water-leaving radiances at 4-km and 20-km resolutions. Data are available for November 1978 through June 1986.

Pathfinder Advanced Very High Resolution Radiometer (AVHRR)—Data contain daily and 10-day global composites of terrestrial Normalized Difference Vegetation Index (NDVI) and atmospherically corrected radiances at 8-km resolution produced using improved algorithms. Data are available for 1981 to present.

Goddard Data Assimilation Office (DAO)—Four-dimensional, assimilated data contain global atmospheric profiles of model-generated winds, temperature, surface parameters, water vapor, and radiative heating at 2- x 2.5-degree resolution. Data are available for 1985 through 1993.

Moderate Resolution Imaging Spectroradiometer (MODIS) Airborne Simulator (MAS)—A 50-channel radiometer on a NASA ER-2 high-altitude aircraft. MAS data help define, develop, and test algorithms for the MODIS, a key EOS sensor. Its archive consists of nine campaigns and a number of noncampaign-related data sets and is growing continuously. Because of the volume, data are maintained and distributed on tape. The MAS Web site is at http://daac.gsfc.nasa.gov/CAMPAIGN_DOCS/MAS/mas_home.html.

Tropical Ocean Global Atmosphere-Coupled Ocean Atmosphere Response Experiment (TOGA-COARE)—Data contain field observations of radiation, cloud, and precipitation parameters in the tropical Pacific collected from surface-, aircraft-, and satellite-based instruments. Data are available for November 1992 to February 1993.

Tropical Rainfall Measuring Mission (TRMM)—Data contain visible, infrared, and microwave observations of tropical and subtropical rain systems daily at 4-km resolution, and spatially and temporally resampled data over 5-day and monthly periods at 1- and 5-degree resolutions, respectively. Data are available for December 1997 through the present and can be accessed at <http://lake.nascom.nasa.gov/DATA/TRMM/index.html>.

MODIS—The key instrument on board Terra, acquiring 36 discrete spectral bands between 0.4 and 14.5 μm , MODIS provides long-term observations. The instrument views the entire Earth's surface every 1 to 2 days and is contributing to the understanding of interrelated Earth processes. The GSFC DAAC's MODIS data holdings consist of radiometric and geolocation products and atmosphere and ocean products. MODIS data products can be accessed at <http://acdisx.gsfc.nasa.gov/data/>.

Data Access

Data may be ordered through the Goddard DAAC search-and-order system at <http://daac.gsfc.nasa.gov/data/>, and information about the DAAC can be found at the Web site listed below. Online access is also available through the EDG (see page 4).

For assistance or more information, contact

**Goddard DAAC User Services
NASA/GSFC, Code 902
Greenbelt, MD 20771 U.S.A.**

**Phone: +1 301-614-5224; Fax: +1 301-614-5268
E-mail: gsfc@eos.nasa.gov or daacuso@daac.gsfc.nasa.gov
Web: <http://daac.gsfc.nasa.gov>**

Jet Propulsion Laboratory

The JPL Physical Oceanography DAAC (PO.DAAC) provides global oceanographic data from spaceborne instruments, and produces higher level data products. PO.DAAC's core holdings are data on sea surface height, winds, and temperature. Its main user communities are oceanographic and interdisciplinary scientists, as well as the education community.

Available Data

PO.DAAC's data are largely satellite derived. In addition to ocean wind, sea surface height, and sea surface temperature, other holdings include data on ocean wave height, tides, ionospheric electron content, atmospheric moisture, and heat flux, as well as in situ data related to the satellite data. The instruments from which these data are derived include the TOPEX/POSEIDON altimeters and radiometer, the SeaWinds on QuikSCAT scatterometer, the NASA Scatterometer (NSCAT), the NOAA Advanced Very High Resolution Radiometer (AVHRR), and the Seasat scatterometer and altimeter. Data highlights are listed below.

Ocean Wind

SeaWinds on QuikSCAT—Global ocean wind speed and direction data from July 1999 to the present are offered in both swath and gridded formats. Daily browse images of radar cross-section (σ_0) over oceans, land, and ice are also available.

NSCAT—Global ocean wind speed and wind direction data are available from September 1996 to June 1997. The data also include σ_0 over oceans, land, and ice.

Sea Surface Height

TOPEX/POSEIDON—Data include sea surface height, wind speed, significant wave height, tropospheric water vapor, ionospheric electron content, and ancillary information along the satellite's track, from both the NASA and CNES (French Space Agency) altimeters and radiometer. The complete *Merged Geophysical Data Record-B (MGDR-B)* and a reduced-volume *Sea Surface Anomaly* product, as well as data on a uniform space-time grid, are available from 1992 to the present.

Tide Models evaluated for the production of the TOPEX/POSEIDON MGDR are on CD-ROM. TOPEX/POSEIDON near-real-time alongtrack and gridded water vapor, wind speed, and wave height are available online.

Sea Surface Temperature

AVHRR—Data processed with the newer *AVHRR Oceans Pathfinder* and the older *Multi-Channel Sea Surface Temperature (MCSST)* algorithms on uniform spatial grids are available as weekly averages since 1981 (MCSST, 18 km) or daily and 8-day averages since 1985 (Pathfinder 9 km and coarser).

AVHRR Climatologies—Quality-controlled climatologies of *AVHRR* sea surface temperature are available from 1985 to 1999.

Global Ocean Surface Temperature Atlas Plus (GOSTAplus)—A 150-year set of gridded monthly 2.5-degree surface temperature observations for both oceans and land.

NCEP Reynolds Historical Reconstructed and Optimally Interpolated Sea Surface Temperature Data Sets—2-degree gridded monthly and 1-degree gridded weekly and monthly global SST fields.

Browse and Subset Services

For most of the large data sets described above, online browse and subset facilities are available to any Java-enabled Web browser.

Software Products

The *Atlas of Ocean Sections CD-ROM* contains hydrographic data and software (*ATLAST*, *Ocean Data View*, and *Power OceanAtlas*) to use with such data.

Future Data Holdings

Planned products include near-real-time NAVOCEANO 9-km MCSST, MODIS 4-km daily SST, and NSCAT- and QuikSCAT-derived sea ice extent maps. The PO.DAAC will archive and distribute products derived from the Jason-1 altimetry mission, the GRACE gravity mission, and the SeaWinds scatterometer on ADEOS-II.

Data Access

The JPL PO.DAAC catalog of products and educational information can be accessed through the Web site. Investigators may subscribe to the PO.DAAC data-news bulletins. An online search-and-order service is also available through the EDG (see page 4).

For assistance or more information, contact

JPL PO.DAAC User Services

Jet Propulsion Laboratory

Phone: +1 626-744-5508; Fax: +1 626-744-5506

E-mail: jpl@eos.nasa.gov or podaac@podaac.jpl.nasa.gov

Web: <http://podaac.jpl.nasa.gov>

FTP: podaac.jpl.nasa.gov

Langley Research Center

The Langley DAAC supports more than 30 projects and has more than 300 archived data sets relating to radiation budget, clouds, aerosols, and tropospheric chemistry. These data sets were obtained from satellite measurements, as well as field experiments.

Available Data

Radiation Budget

Radiation budget data sets contain information related to the variability of total solar irradiance, top of atmosphere and surface radiation properties, effects of clouds on the energy budget, as well as data useful for solar energy technologies.

- *Active Cavity Radiometer Irradiance Monitor (ACRIM) II and III*
- *Atmospheric Radiation Measurement (ARM) Enhanced Shortwave Experiment (ARESE)*
- *Clouds and the Earth's Radiant Energy System (CERES)*
- *Earth Radiation Budget Experiment (ERBE)*
- *Multi-angle Imaging SpectroRadiometer (MISR)*
- *Nimbus-7 Earth Radiation Budget (ERB)*
- *Sulfates/Smoke, Clouds, and Radiation (SCAR)*
- *Surface Radiation Budget (SRB)*
- *Surface Solar Energy (SSE)*

Clouds

Cloud data sets contain information on the radiative properties of clouds; cirrus, marine stratus, and arctic cloud field studies; and subsonic aircraft effects on contrails and other cloud systems.

- *International Satellite Cloud Climatology Project (ISCCP)*
- *First ISCCP Regional Experiment (FIRE)*
- *SUBsonic aircraft: Contrail & Cloud Effects Special Study (SUCCESS)*

Aerosols

Aerosol data sets contain satellite and lidar-derived information on the spatial and vertical distribution of stratospheric and tropospheric aerosols, as well as direct radiative impacts and chemical, physical, and optical properties of aerosols.

- *48-inch Light Detection and Ranging (48" LIDAR) Aerosol Research Branch (ARB)*
- *Lidar Atmospheric Sensing Experiment (LASE)*
- *Lidar In-space Technology Experiment (LITE)*

- *Polar Ozone and Aerosol Measurement (POAM) II and III*
- *Stratospheric Aerosol and Gas Experiment (SAGE) I and II*
- *Stratospheric Aerosol Measurement (SAM) II*
- *Tropospheric Aerosol Radiative Forcing Observational eXperiment (TARFOX)*

Tropospheric Chemistry

Tropospheric chemistry includes geographic and temporal distribution of biomass burned, concentrations of key chemical species, and distribution and behavior of tropospheric carbon monoxide, ozone, and water vapor.

- *Biomass Burning*
- *Global Tropospheric Experiment (GTE)*
- *LASE*
- *Measurement of Air Pollution from Satellites (MAPS)*
- *Measurements of Pollution in the Troposphere (MOPITT)*
- *North American Research Strategy for Tropospheric Ozone (NARSTO)*
- *NASA Water Vapor Project (NVAP)*
- *Scanning Multichannel Microwave Radiometer (SMMR)*
- *Special Sensor Microwave/Imager (SSM/I)*

Future Data Sets

The Langley Atmospheric Sciences Data Center will archive data derived from the following projects:

- *CERES (Aqua)*
- *ESSP-3 (formerly PICASSO-CENA), the third mission of the NASA Earth System Science Pathfinder (ESSP) program*
- *SAGE III*
- *Tropospheric Emission Spectrometer (TES)*

Data Access

Access to data, data search and order, and information about the Langley Atmospheric Sciences Data Center can be found at the Web site listed below. Online access is also available through the EDG (see page 4).

For assistance or more information, contact

**Science, User, and Data Services
NASA Langley Research Center, MS 157D
2 South Wright Street
Hampton, VA 23681-2199 U.S.A.**

**Phone: +1 757-864-8656; Fax: +1 757-864-8807
E-mail: larc@eos.nasa.gov
Web: <http://eosweb.larc.nasa.gov>**

National Snow and Ice Data Center

The NSIDC DAAC provides data and information on snow and ice processes, especially interactions among snow, ice, atmosphere, and ocean in support of research in global change detection and model validation. NSIDC also provides general data and information services to the cryospheric and polar processes research community.

Available Data

MODIS Products

Moderate Resolution Imaging Spectroradiometer (MODIS) Snow and Sea Ice Extent Products—Snow cover products include Level 2 swath data and Level 3 gridded daily and 8-day composites at 500-m resolution. Sea ice extent products include Level 2 swath data and Level 3 gridded day and night composites at 1-km resolution.

Passive Microwave and AVHRR Products

Nimbus-7 Scanning Multichannel Microwave Radiometer (SMMR)—Data include gridded brightness temperatures, sea ice type, extent, and concentration.

Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave/Imager (SSM/I)—Data include gridded brightness temperatures, and sea ice type, extent, and concentration. Near-real-time brightness temperature, sea ice concentration, and snow extent data are also available.

Advanced Very High Resolution Radiometer (AVHRR) 1-km Level 1b Polar Data Set—AVHRR scenes (1.1-km resolution at nadir, unprocessed raw data) are available for both polar regions.

AVHRR Equal Area SSM/I Earth (EASE)-Grid Twice Daily Composites—Data are available in 5-km and 1.25-km grids for both the Northern and Southern Hemispheres.

Northern Hemisphere EASE-Grid Weekly Snow Cover and Sea Ice Extent—The data set combines snow cover and sea ice extent at weekly intervals for October 1978 through August 1995, and snow cover alone from January 1971 to October 1978.

Near-Real-Time SSM/I EASE-Grid Daily Global Ice Concentration and Snow Extent—Near-real-time snow extent and sea ice concentration maps are posted within 1 to 2 days of satellite overpass and are available for 2 weeks after initial posting.

Altimetry and Elevation Data

Digital Synthetic Aperture Radar (SAR) Mosaic and Elevation Map of the Greenland Ice Sheet

Polar Atmospheric Data

Arctic Water Vapor Characteristics From Rawinsondes—The data set is based on records from approximately one-half million soundings in the Arctic from 1954 to 1991.

Television Infrared Observation Satellite (TIROS) Operational Vertical Sounder (TOVS) Pathfinder Path-P Daily Arctic Gridded Atmospheric Parameters—The data set has 14 gridded parameters, including atmospheric temperature, water vapor, skin surface temperature, cloud fraction, surface and cloud top pressure, and emissivity from July 1979 to December 1998.

Additional Products

Geographical Interface for Subsetting, Mapping, and Ordering (GISMO)—The NSIDC DAAC has developed GISMO, a Web-based search-and-order tool. Users can search, subset, and order AVHRR, SSM/I, SMMR, and TOVS EASE-Grid products using this tool. Data may be queried by spatial range, temporal range, and parameters, and are delivered by FTP or on 8-mm tape.

The NSIDC DAAC and its host, the collocated National Snow and Ice Data Center, distribute additional data sets and products outside EOSDIS, including some managed for the NOAA National Geophysical Data Center and the National Science Foundation (NSF) Arctic System Science Data Coordination Center. For more information, see NSIDC's Web site or contact User Services.

Future Data Holdings

Planned products include ice sheet topography, cloud and atmospheric properties, and other ocean, land, and sea ice products from the Geoscience Laser Altimeter System (GLAS). Other data include cloud properties, radiative energy flux, precipitation, sea surface temperature, sea ice, snow cover, and sea surface wind fields from the Advanced Microwave Scanning Radiometer-Earth Observing System (AMSR-E) and V0-SSM/I.

Data Access

Data orders may be placed at the NSIDC DAAC through the EDG (see page 4). Users may also access information on NSIDC data holdings through the online data catalog accessible from NSIDC's Web site. Depending on the data set, NSIDC data products are available on a variety of media, including CD-ROM, 8-mm tape, and FTP.

For assistance or more information, contact

**NSIDC DAAC User Services
National Snow and Ice Data Center
449 UCB, University of Colorado
Boulder, CO 80309-0449 U.S.A.**

**Phone: +1 303-492-6199; Fax: +1 303-492-2468
E-mail: nsidc@eos.nasa.gov or nsidc@nsidc.org
Web: <http://nsidc.org>**

Oak Ridge National Laboratory

The ORNL DAAC provides data and information about the dynamics between the biological, geological, and chemical components of the Earth's environment. These dynamics are influenced by interactions between organisms and their physical surroundings, including soils, sediments, water, and air.

Available Data

The ORNL DAAC maintains three broad types of data:

- Field campaign data: coordinated craft- and satellite-based measurements of biogeochemical features in specific ecosystems.
- Land validation data: ground-based measurements used to assess EOS remote-sensing data products.
- Regional and global data: measurements used to drive and validate models of terrestrial ecosystem properties and processes.

Field Campaign Data

Holdings include the following field campaigns:

Boreal Ecosystem–Atmosphere Study (BOREAS), 1994–1996

First ISLSCP (International Satellite Land Surface Climatology Project) Field Experiment (FIFE), 1987–1989

Large-Scale Biosphere–Atmosphere Experiment in Amazonia (LBA), ongoing

SAFARI 2000, a field and remote-sensing campaign in southern Africa, 1999–2000

Data from the field campaigns include

- Fluxes of heat, moisture, carbon dioxide, and radiation
- Site characteristics: climate, soils, and ecology
- Vegetation and surface radiance data: species, leaf angle, leaf area index, light wand data, leaf moisture, photosynthesis, leaf chlorophyll, and biomass
- Satellite and airborne measurements

Land Validation Data

FLUXNET—Measurements of carbon dioxide, energy, and water vapor fluxes from towers worldwide are available for 1990 to the present.

EOS Land Validation—Ground-based and airborne measurements have been collected to assess EOS instruments and algorithms used in generating remotely sensed data. Data from 24 sites worldwide are available through the Mercury system at <http://mercury.ornl.gov/ornldaac/>.

Regional and Global Data

Climate—Holdings include U.S. climate data, regional and global climate model scenarios, and long-term global climate data. Dates of the data sets range between 1753 and 1999.

Hydroclimatology—U.S. precipitation and streamflow data, as well as global river discharge data are available. Dates of the data sets range between 1807 and 1991.

Soil—U.S. and global data about soil properties include depth, texture, conductivity, chemical content, pH, and temperature. Dates of the data sets range between 1940 and 1996.

Vegetation—Holdings include global data related to vegetation, biomass, net primary productivity, historical leaf area index, and the Vegetation-Ecosystem Modeling and Analysis Project (VEMAP), which examined the conterminous United States. Dates of the data sets range between 1895 and 1996.

Regional and Global Data via Mercury—Users can access additional regional and global data held at various data centers through the online Mercury system at <http://mercury.ornl.gov/ornl/>.

Future Data Holdings

The ORNL DAAC plans to archive further data related to LBA, SAFARI 2000, forest and grassland litter, soil respiration and root characteristics, flux tower measurements, and land validation.

Data Access

ORNL DAAC data are available online at <http://www.daac.ornl.gov> and through the EDG (see page 4).

For assistance or more information, contact

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P.O. Box 2008, MS-6407, Bldg. 1507
Oak Ridge, TN 37831-6407 U.S.A.**

**Phone: +1 865-241-3952; Fax: +1 865-574-4665
E-mail: ornl@eos.nasa.gov or ornldaac@ornl.gov
Web: <http://www.daac.ornl.gov/>**

Socioeconomic Data and Applications Center

The Socioeconomic Data and Applications Center is collocated with and operated by the Center for International Earth Science Information Network (CIESIN) at Columbia University. SEDAC focuses on human interactions in global environmental change and on providing products and services for decision making that combine Earth science and socioeconomic data. SEDAC provides a directory of socioeconomic data and acts as an "Information Gateway" for improving the exchange of data and information between Earth and socioeconomic scientists.

Available Data

Gridded Population of the World (Version 2)—The Gridded Population of the World data include population estimates and densities for 1990 and 1995 on a 2.5-arc-minute grid. Data adjusted to match United Nations national population estimates for 1990 and 1995 are also available. The land area, population counts, and densities for each 2.5-arc-minute grid cell are available for the globe and six continental regions. Additionally, land area and population counts are available for each country.

LandScan 2000—A global population database produced by the Oak Ridge National Laboratory (ORNL), LandScan 2000 is compiled on a 30-arc-second (1 km) latitude/longitude grid. Census counts at the national and subnational level were apportioned to each grid cell based on probability coefficients, which are based on proximity to roads, slope, land cover and nighttime lights. The data files are available in Band Interleaved by Line (BIL) format by continent, and in ArcInfo format for the global coverage.

Potential Impacts of Climate Change on World Food Supply: Data Sets from a Major Crop Modeling Study—This site provides access to data on projected crop yield changes for major world regions based on climate model estimates, increased atmospheric carbon dioxide concentrations, and alternative adaptation scenarios. Extensive information is provided online on the study's methodology, inputs, and limitations, and on related links.

China Dimensions Data Collection—China Dimensions is a rich collection of data resources for the People's Republic of China. Highlights include digital administrative boundaries; fundamental Geographic Information System (GIS) layers; and county-level data on population, agriculture, economics, and hospitals.

Georeferenced Population Datasets of Mexico—This collection includes GIS and time series data on Mexico's population, including a 1-km gridded population dataset and a time series of urban population change for 1921 through 1990. Data files in ArcInfo export format are available via FTP.

Other SEDAC Services

U.S.-Mexico Demographic Data Viewer—This application provides rapid, interactive data mapping, viewing, and analysis of more than 200 socioeconomic variables that are congruent between the United States and Mexico. A useful tool for browsing and visualizing patterns at geographic levels ranging from regions to counties/municipios, the *U.S.-Mexico DDViewer* may be used to create customized maps of population, health, and other socioeconomic characteristics using a Java-enabled Internet browser.

Special Report on Emissions Scenarios—Forty scenarios of future greenhouse gas emissions were prepared by Working Group III of the Intergovernmental Panel on Climate Change. The scenarios can assist in climate change analysis, including climate modeling and the assessment of impacts, adaptation, and mitigation.

Environmental Treaties and Resource Indicators (ENTRI)—This searchable relational database contains international environmental treaties, treaty summaries, treaty status files, and global natural resource indicator data.

Data Access

SEDAC Data and Information Catalog Services

SEDAC has developed an electronic gateway to provide access to the catalogs of a diverse international group of data archives and other institutions. The distributed search interface is available on the Web at

<http://www.gateway.ciesin.columbia.edu>

For assistance or more information, contact

**SEDAC User Services
CIESIN at Columbia University
P.O. Box 1000
61 Route 9W
Palisades, NY 10964 U.S.A.**

Phone: +1 845-365-8920; Fax: +1 845-365-8922

E-mail: sedac@eos.nasa.gov or ciesin.info@ciesin.columbia.edu

Web: <http://sedac.ciesin.columbia.edu>

National Oceanic and Atmospheric Administration

NOAA is charged with describing, protecting, and predicting changes in the Earth's environment and promoting global environmental stewardship. As part of NOAA, the National Environmental Satellite, Data, and Information Service (NESDIS) operates the U.S. civilian weather satellite program and maintains and distributes information from the world's largest repository of environmental data. All NESDIS Data Centers are members of the World Data Center System. The National Climatic Data Center (NCDC) provides weather and climate records; the Satellite Active Archive (SAA) supplies satellite data and imagery; the National Geophysical Data Center (NGDC) maintains geophysical information and paleoclimatological data; and the National Oceanographic Data Center (NODC) provides data from global oceans.

For additional information or assistance, contact

**NOAA National Data Centers
DOC/NOAA/NESDIS
151 Patton Avenue
Asheville, NC 28801 U.S.A.
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Contacts

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EDC DAAC—Land Processes

Phone: +1 605-594-6116 Fax: +1 605-594-6963

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GHRC—Global Hydrology

Phone: +1 256-961-7932 Fax: +1 256-961-7859

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GSFC DAAC—Upper Atmosphere, Atmospheric Dynamics, Global Precipitation, Global Biosphere, Ocean Color

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JPL DAAC—Physical Oceanography

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LaRC DAAC—Radiation Budget, Clouds, Aerosols, Tropospheric Chemistry

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